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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/540,562

11/16/2005

Koh Ishigami

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

ROTH, LAURA K

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,562	Applicant(s) ISHIGAMI ET AL.	
	Examiner Laura K. Roth	Art Unit 2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 07 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4 and 5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogoshian (US Pub. 2005/0135847) in view of Tanaka et al. (US Pub. 2005/0042534) and in view of Uehara et al. (US Pub. 2004/0057741).

Regarding claim 1, Bogoshian (US Pub. 2005/0135847) teaches a fixing method comprising: heat-pressure-fixing an unfixed toner image formed on a recording medium by using fixing means (fig.2, via #10 and #100), wherein the unfixed toner image is fixed when the recording medium passes through at least two fixing units (fig.2, #10 and #100) arranged in series in a conveying direction of the recording medium (fig.2, see #10 and #100), and wherein a maximum temperature on the recording medium when the recording medium passes through a first fixing unit is denoted by T1 (para.0045: 375 degrees), a maximum temperature on the recording medium when the recording medium passes through a second fixing unit is denoted by T2 (para.0046: 400 degrees).

Regarding claim 4, Bogoshian (US Pub. 2005/0135847) teaches a fixing device (fig.2, #10 and #100) comprising: fixing means (fig.2) for heat-pressure-fixing an unfixed toner image formed on a recording medium, the fixing means comprising fixing units which are heat-pressure-fixing type devices (fig.2, #10 and #100), wherein the unfixed

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toner image is fixed when the recording medium passes through at least two of the fixing units arranged in series in a conveying direction of the recording medium (fig.2, #10 and #100) wherein a maximum temperature on the recording medium when the recording medium passes through a first fixing unit is denoted by T1 (para.0045: 375 degrees), a maximum temperature on the recording medium when the recording medium passes through a second fixing unit is denoted by T2 (para.0046: 400 degrees).

However, Bogoshian (US Pub. 2005/0135847) fails to disclose any particulars about the toner used.

Regarding claims 1, 2, 4, and 5, Tanaka et al. (US Pub. 2005/0042534) teach a toner with a flow tester softening temperature of the toner is denoted by Ts (para.0099: 40 to 70 degrees), and a flow starting temperature of the toner is denoted by Tfb (table 4: 73-97 degrees), and a flow tester 1/2 method melting temperature of the toner is denoted by $T_{1/2}$ (para.0094, Para.0040: 60 to 130 Degrees); and the toner contains a release agent (para.0111), wherein a maximum value of a maximum endothermic peak is found in a temperature range of 60 to 140°C in an endothermic curve in differential scanning calorimetry on the toner (para.0033)..

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the apparatus of Bogoshian (US Pub. 2005/0135847) by using the toner of Tanaka et al. (US Pub. 2005/0042534) in order to provide for an apparatus with good low-temperature image fixing properties and good hot off-set prevention (para 0014).

However, Bogoshian (US Pub. 2005/0135847) fail to teach the temperature relationships recited in the claims.

Regarding claims 1 and 4, Bogoshian (US Pub. 2005/0135847) teaches a temperature range for T1 of about 375°F to 400°F, or about 190°C to 200°C (para.0034) and a maximum temperature T2 of 400°F, or about 200°C (para.0046).

Regarding claims 1 and 4, Tanaka et al. (US Pub. 2005/0042534) teach only one feature of the fixing temperature - the lowest effective fixing temperatures for the different test toners in a range of from 115°C to 125°C.

Though neither one of the two references explicitly teach the limitation “wherein the maximum temperature T1 on a recording medium when the recording medium passes through a first fixing unit is 110 to 160 °C, and the maximum temperature T2 on the recording medium when the recording medium passes through a second fixing unit is 140 to 190 °C”, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the apparatus of Bogoshian (US Pub. 2005/0135847) to use the new toner of Tanaka et al. (US Pub. 2005/0042534) in order to provide a toner having better low-temperature image-fixing properties in order save energy (para.0007). The toner of Tanaka et al. (US Pub. 2005/0042534) has a much lower minimum fixing temperature than the minimum temperature disclosed in Bogoshian (US Pub. 2005/0135847) and thus a significant energy savings can be realized by using the toner of Tanaka et al. (US Pub. 2005/0042534). In order to realize the energy saving benefits when using the toner of Tanaka et al. (US Pub. 2005/0042534), the heating structure of Bogoshian (US Pub. 2005/0135847) would, by necessity, have to be adjusted

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downward and it would have been obvious to try, through manipulating toner formulations and temperature ranges, to optimize the apparatus to provide energy savings while maintaining a desirable image product (KSR Int'l Co. v. Teleflex, Inc. (KSR), 550 U. S. 398, 82 USPQ2d 1385 (2007)).

However, Bogoshian (US Pub. 2005/0135847) fails to teach a minimum temperature of the recording medium between the two fixing units.

Regarding claim 1, Uehara et al. (US Pub. 2004/0057741) teach a fixing method, comprising heat-pressure- fixing an unfixed toner image formed on a recording medium by using fixing means (via fig.1), wherein: the unfixed toner image is fixed when the recording medium passes through at least 2 fixing units arranged in series in a conveying direction of the recording medium (see fig.1).

Regarding claim 4, Uehara et al. (US Pub. 2004/0057741) teach a fixing device, comprising fixing means for heat-pressure-fixing an unfixed toner image formed on a recording medium (via fig.1), wherein: the unfixed toner image is fixed when the recording medium passes through at least 2 fixing units arranged in series in a conveying direction of the recording medium (see fig.1).

Regarding claims 1, 2, 4, and 5, Uehara et al. (US Pub. 2004/0057741) teach a minimum temperature on the recording medium during a time period commencing on ejection of the recording medium from the first fixing unit and ending on entry of the recording medium into the second fixing unit is denoted by t (para.0098: travel time, 4 seconds, temperature equal to or greater than 80 degrees).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the apparatus and method of Bogoshian (US Pub. 2005/0135847) by setting the distance between the fixing units such that the paper temperature does not fall below 80 degrees as seen in Uehara et al. (US Pub. 2004/0057741) in order to ensure that the toner holds its softening state (para.0098) so that it can be further treated without the application of high pressure which can cause deformation (para.0100).

Via the combination, the following formulas can be satisfied:

$$T1 > T_{fb} \text{ formula (1)}$$

$$T2 > t > T_s \text{ formula (2)}$$

$$T2 > T_{1/2} \text{ formula (3).}$$

Response to Arguments

Applicant's arguments filed 7 May 2009 have been fully considered but they are not persuasive. The applicants argue that the reference of Bogoshian (US Pub. 2005/0135847) can not be taken to suggest modifying the temperature ranges used since the toner is not specified; however, by the ranges stated in Bogoshian (US Pub. 2005/0135847) and the lowest effective fixing temperatures described in Tanaka et al. (US Pub. 2005/0042534) it is clear that the reference of Bogoshian (US Pub. 2005/0135847) is not using a toner with as low-temperature of fixing capability as in Tanaka et al. (US Pub. 2005/0042534). For the energy saving benefits continually sought in the art, it would be obvious to try recalibrating the image forming apparatus to

use a toner with similar fixing characteristics. Please also see additional support recited in the rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura K. Roth whose telephone number is (571)272-2154. The examiner can normally be reached on Monday-Friday, 7:30 am to 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David M. Gray can be reached on (571)272-2119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David M Gray/
Supervisory Patent Examiner,
Art Unit 2852

/LKR/
8/6/2009